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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,651	11/20/2001	David L. Larkin	TI-23422.1	8936

22879 7590 06/16/2005

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FORT COLLINS, CO 80527-2400

EXAMINER

ANYA, IGWE U

ART UNIT	PAPER NUMBER
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2891

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/988,651

Applicant(s)

LARKIN ET AL

Examiner

Igwe U. Anya

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-14, 17 and 19-29 is/are rejected.
- 7) ☒ Claim(s) 15, 16 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/6/05</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.
2. Claims 24 – 27, and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 24 – 27, and 29 recites the limitation "the planarizing dielectric layer" in lines 1 to 2 of claims 24 – 27, and in lines 2 – 3 of claim 29. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 12 – 14, 17, 19 – 23, 26, and 28 – 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Cohen et al. (US Patent 5530293).
6. Cohen et al teach a method of manufacturing a semiconductor device, comprising:

providing a semiconductor device (figs. 1 – 5) having at least one metal layer (3) completed;

then applying a planarizing dielectric layer (1) on top of the semiconductor device;

then providing a hydrogen treatment until hydrogen diffuses through out the semiconductor device (col. 3 lines 17 – 65);

wherein the hydrogen treatment includes heating the semiconductor device in a hydrogen rich environment (col. 3 lines 17 – 65);

wherein the hydrogen treatment includes applying hydrogen in situ by introducing hydrogen as a plasma to the semiconductor device (col. 4 lines 48 – 54);

wherein the planarizing dielectric includes a second layer of HSQ (1) applied by coating (col. 3 lines 3 – 7) over a first layer of dielectric material (fig. 1A lower 2);

wherein the semiconductor device undergoes an N2 bake after an HSQ layer of a multilayer planarizing dielectric layer is added (col. 3 lines 3 – 20); and

wherein the semiconductor device undergoes the hydrogen treatment after a final layer of the planarizing dielectric layer is added (col. 3 line 21 – col. 4 line 6).

7. Claims 21 – 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Mora (US Patent 4920077).

8. Mora teaches a method of manufacturing a semiconductor device, comprising:  
providing a semiconductor device having at least one metal layer completed (col. 4 lines 22 – 47);

then providing a hydrogen treatment until hydrogen diffuses into through out the semiconductor device (col. 4 lines 48 – 54);

wherein the hydrogen treatment includes heating the semiconductor device in a hydrogen rich environment (col. 4 lines 48 – 54); and

wherein the hydrogen treatment includes applying hydrogen in situ by introducing hydrogen as a plasma to the semiconductor device (col. 4 lines 48 –54).

9. Claims 15, 16, 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William B. Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya  
Examiner  
Art Unit 2891

IA

June 11, 2005

A handwritten signature in black ink, appearing to read 'B. William Baumeister', with a stylized, looping flourish at the end.

**B. WILLIAM BAUMEISTER  
SUPERVISORY PATENT EXAMINER**